
An intonational comparison of Yes/No Questions between the dialect of Evia and Standard Greek

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Abstract

This paper presents an Autosegmental analysis of the intonational contour of Yes/No Questions in Evia Greek (EG) and compares it to that of Standard Modern Greek (SMG). It is shown that the two dialects can express Y/N questions differently: where SMG has a rise-fall at the end of the question, EG can have either a similar contour to SMG or a rise as a boundary tone. In our analysis, we followed the auto-segmental metrical theory and in particular GRTToBI (Arvaniti & Baltazani 2005). We collected sound data from 4 native speakers of EG via 4 different production experiments, manipulating the position of the last stressed syllable (final syllable, penult, and antepenult). Therefore, we controlled the realisation of tonal targets under tonal crowding conditions. We also measured the scaling and the alignment of nuclear accents and phrase-edge tones. A different phonetic realization has frequency of occurrence of 71% in the dialectal variety, that is described with low nuclear accent (L*), a bitonal phrase tone (LH-) and a H(igh) edge tone (H%), which sound similar to the Elliptical Questions in SMG or continuation rise, but do not have the same function.

Keywords: intonation, Yes/No questions, dialect, phonological realization, phonetic realization

1. Introduction

According to Autosegmental-Metrical Theory (henceforth AMT), tonal targets phonologically associate with segments. Since the 1980s, there have been many attempts to provide a model that describes intonation within this theory, the most important being Pierrehumbert (1980) and ToBI (1992). ToBI (Tone and Break Indices) (Silverman et al. 1992; Pitrelli, Beckman & Hirschberg 1994; Beckman & Ayers Elam 1993; Brugos, Shattuck-Hufnagel & Veilleux 2006) was first developed to analyse and describe English intonation but was soon adapted to investigate the phonology of other languages. GRTToBI is the version of the system used for Greek, for which it was adapted Greek by Arvaniti & Baltazani (2000, 2005).

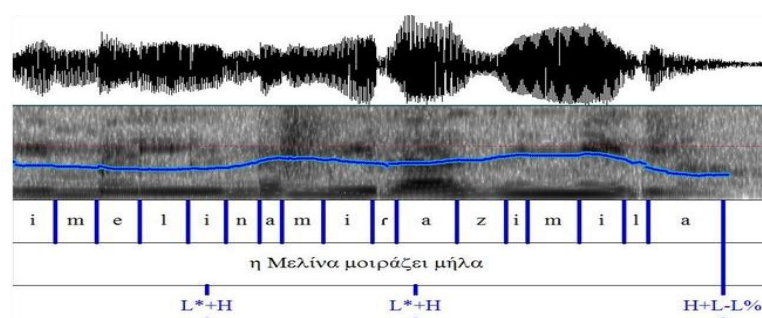


Figure 1. The waveform (first level), spectrogram (second level) and tiers for the phrase *η Μελίνα μοιράζει μήλα*.

Figure 1 shows the phonetic details of the phrase *η Μελίνα μοιράζει μήλα* ‘Melina distributes apples’ in Praat (Boesma & Weenink 2009). Three parts are immediately distinguished on the vertical axis: the first part is the waveform, that is, the fluctuations of air pressure during speech production (Ladefoged 2007). In the second part, we can see the spectrogram and the contour. The contour represents the fundamental frequency F0, while the spectrogram is shown in the background. In the last part, we can see the tiers, the first one we can discriminate the sounds, the second one capturing the utterance and the last one the tones. The horizontal axis represents time.

AMT assumes that pitch accents are associated with specific targets at the contour, either at H(igh) or L(ow) frequency (Leben 1973; Goldsmith 1976). These tonal targets can be combined with each other to create bitonal targets that we can perceive as a rise (LH) or as a fall (HL).

Three tonal categories of pitch accents are distinguished depending on their position in the utterance. Pitch accents are referred to as high or low targets or as a combination of the two. We can find them before the phrase-edged tones. The asterisk shows the alignment of the stress with the contour. In Greek, the asterisk indicates the focus of the nuclear accent (Baltazani & Jun 1999).

The last stress in the utterance means the end of the phrase or of the sentence. There are two tonal targets: (a) phrase tones, which refer to the end of a smaller phrase in the utterance, and (b) edge tones, which refer to the end of the utterance.

As far as Alignment is concerned, it is the correspondence of the stressed syllable with the tonal target (Pierrehumbert 1980; Beckman & Pierrehumbert 1986; Hirst 1988; Grice 1995; Ladd 1996; Arvaniti, Ladd & Mennen 2000; Gussenhoven 2004). The main principle of AMT is that the tonal target is associated with the segments, as mentioned before. In Figures 2 and 3 below, we can see the alignment of the LH pitch

accent in the utterances *είναι πίσω από την ντουλάπα*; ‘is it behind the closet?’ and *είναι μες στη ντουλάπα* ‘is it in the closet?’ by two different speakers. The Low target in the first example aligns at the onset of the vowel /u/ and the High one at the onset of the /p/ sound. In contrast, as we can see in the second example, the Low target aligns in the /d/ sound and the High at the end of /p/ sound.

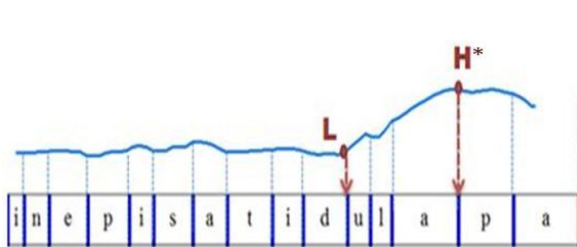


Figure 2. The alignment of the LH pitch accent in the utterance *είναι πίσω από την ντουλάπα*; ‘is it behind the closet?’ produced by speaker M.

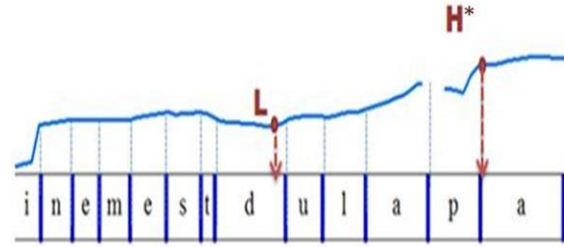


Figure 3. The difference in the alignment of the LH pitch accent in the same utterance *είναι πίσω από την ντουλάπα*; ‘is it behind the closet?’, produced by speaker V.

Scaling refers to the frequency difference between two targets of the pitch accent (see Arvaniti, Ladd & Mennen 1998). In Figures 4 and 5, we can see the utterance of the question *έχει κόκκινη μπλούζα*; ‘does s/he have a red blouse?’ from two different speakers, with an obvious difference in the fundamental frequency. In the first speaker, the Low target is at 90Hz and the High at 310Hz. In the second speaker, the Low target is at 75Hz and the High at 100Hz. Given that the scaling is the difference of these two targets, it is estimated that scaling is at 220 Hz for the first case and at 25Hz for the second one.



Figure 5. The frequency difference between the L and H tonal targets in the utterance *έχει κόκκινη μπλούζα*; ‘does s/he have a red blouse?’, produced by speaker V. The scaling is estimated at 5 Hz.

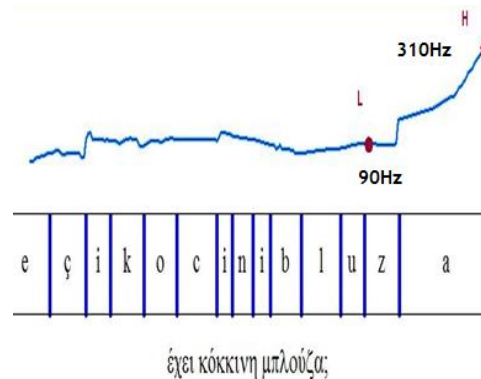


Figure 4. The frequency difference between the L and H tonal targets in the utterance *έχει κόκκινη μπλούζα*; ‘does s/he have a red blouse?’, produced by speaker K. The scaling is estimated at 220 Hz.

Finally, tonal crowding is the phenomenon whereby the realisation of a pitch accent affects another accent next to it (see Arvaniti, Ladd & Mennen 2006). If there

are not many unstressed syllables between two pitch accents or if the pitch accent is realized at the end of the utterance, then the realization of these two pitch accents is affected. Arvaniti et al.'s (2006) findings showed that the L(ow) focus in Y/N is followed by a final rise-fall movement, the alignment of which varies due to tonal crowding. Depending on tonal crowding conditions the final rise-fall peak aligns either with the final vowel of the utterance, if the nucleus is in the final word, or with the last stressed vowel, if the nucleus is on an earlier word.

In Figures 6 and 7, we can see two different questions in which the phrase tone has two unstressed interval syllables before the end of the utterance (Figure 6). In Figure 7, we see the phenomenon in the most extreme form, since there is no unstressed interval syllable.

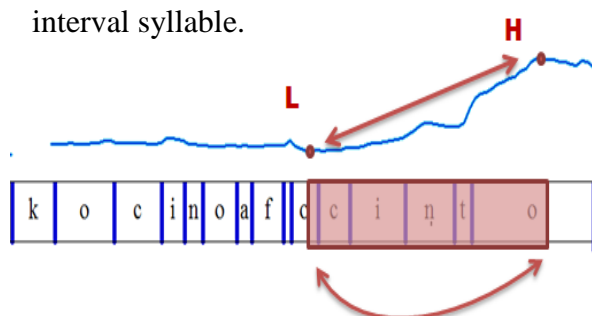


Figure 6. The question *κόκκινο αυτοκίνητο?* 'is it a red car?', where the last stressed syllable is in the antepenult syllable.

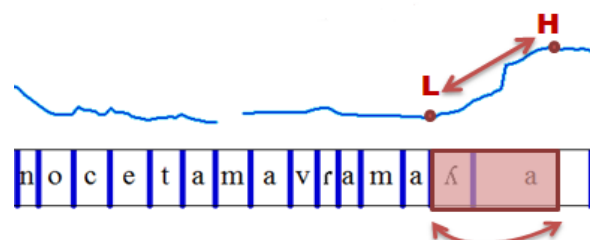


Figure 7. The question *και τα μαύρα μαλλιά;* '[...] with black hair?', where there is no interval unstressed syllable and the tonal crowding phenomenon is in the most extreme form.

Greek Yes/No questions differ from affirmatives only in terms of intonation. Previous research has shown that Yes/No Questions in Greek are characterised by a L* nuclear pitch accent and a H+L L% phrase-edge tone (Grice, Ladd & Arvaniti 2000; Baltazani & Jun 1999; Arvaniti et al. 2006). We emphasise the Low phrase-edge tone because, in contrast with the bibliography, our results show a percentage of 61%. Our findings showed that the EG speakers prefers a L+H H% phrase-edge tone.

Recent work on Italian questions (D'Imperio, Gili & Niebuhr 2010) showed that many tonal targets or a combination of targets are used in the standard language to realise specific pragmatic meanings whereas in the dialects these are used differently. For instance, in the dialect of Pisa the question has a H*+L pitch accent or a H*. Whereas in standard Italian the H*+L is used for oppositional focus and the H* at the beginning of utterances.

With this study we wanted to examine if a similar state of affairs holds in the Evia dialect and to investigate possible phonetic and/or phonological differences compared to Standard Modern Greek.

2. Method

I collected 275 spontaneous Yes/No questions divided in three groups depending on the position of the last-occurring stress: (a) questions in which the stress appeared on the final syllable of the utterance; (b) questions in which the stress appeared one unaccented syllable before the end of the utterance; and, (c) questions in which the stressed appeared two unaccented syllables before the end of the utterance. The questions included in each group do not have the same number of words, since they were spontaneous. However, all utterances contain at least two content words and lack a syntactic constituent, usually the subject.

The experimental subjects were four women, native speakers of the dialect aged from 28 to 60 years old. They were digitally recorded in a closed uninsulated space. The data were analyzed using Praat (Boesma & Weenink 2009).

As far as the experimental design is concerned, I tried to elicit these particular questions in many different ways, although none of them had the required result. So I designed experiments with which speakers could forget that they were being recorded and produce the utterances as naturally as possible without adapting the questions to standard Greek. For this reason the experiments resembled games.

In the first experiment, the subjects had to guess through 8 different slides what was hidden in the cards of the person conducting the experiment producing only questions that could be answered with Yes/No. In the second experiment, the subjects held two different maps and tried to guess the noted way only by using Yes/No questions. I rejected (1) the questions that begun with *μήπως* ‘maybe’, because there is a difference in the alignment (Baltazani 2007) and (2) utterances with contours with lots of gaps since it would be difficult to draw safe conclusions.

I performed many measurements involving the simultaneous observation of the waveforms, spectrograms and contours for each utterance. I found two different types of contours. The first one has the particular shape shown in Figure 8.

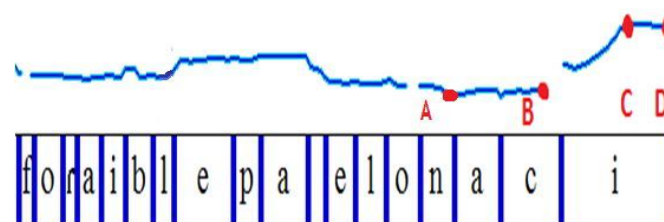


Figure 8. The first type of contour of the dialectical question *φοράει μπλε παντελονάκι*; ‘is s/he wearing blue shorts?’. We can see the points A, B, C, and D that have been measured.

I measured the frequencies of A, B, C, and D. Point A refers to the nuclear pitch accent; point B to the Low target of the phase tone before the elbow (with criteria that refer to the frequency measurements); point C to the High target of the Phrase tone; point D to the last High target. I also measured the time distance between points AB, BC and CD and their alignment with the segments and the scaling, as well.

As for the second contour, that has the typical shape of a Yes/No question (Figure 9). I performed the same measurements using the same criteria and also added two more points seeing as the difference between the two contours is at this part (points E, F in Figure 9) at the edge tone.

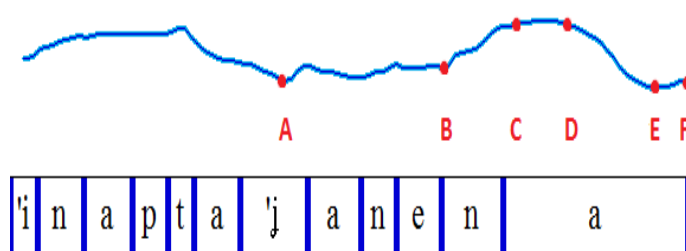


Figure 9. The second type of contour of the dialectal question *είναι από τα Γιάννενα*; 'Is s/he from Ioannina?'. We can see the points A, B, C, D, E, and F that have been measured.

3. Results

The first contour that is found in 71% of our data is described as L*₋LH-H%, with a Low nuclear pitch accent, a LH- phrase tone and a H% edge tone that maintains the high frequency levels forming a high plateau at the end of the utterance (Figure 10). This contrasts with what we already know about Yes/No questions in SMG, where the contour is described as L*₋HL-L%.

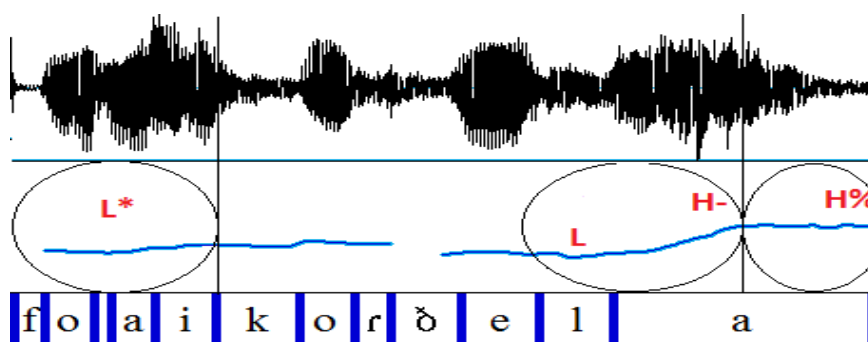


Figure 10. The first type of contour of the dialectal question *φοράει κορδέλα*; 'Is s/he wearing a ribbon?'. We can see the high plateau at the end of utterance.

I replicate the literature (Arvaniti 2002; Arvaniti et al. 2006) only as far as the nuclear pitch accent is concerned, which was L* in all our material. As for the phrase tone, I measured the alignment, which for the Low target occurs with the consonant of the stressed syllable and for the High target in the last vowel of the stressed syllable, regardless of the number of unstressed interval syllables. Measuring the time distance between the L and H point showed that, due to tonal crowding, the more unstressed interval syllables there are the more time is needed to reach the H point. As regards scaling, I found that it falls between 150-200Hz irrespective of the position of the last-occurring stress.

My new finding is that, in contrast with the typical Yes/No question, the edge tone maintains the high frequency levels from the previous phrase tone forming a high plateau. I measured the duration of this plateau showing that it is between 85–95 ms and lasts until the end of the utterance.

The second contour that is found in the rest 29% of the data, is described as L*₋LH-L% consisting of a Low nuclear pitch accent, a LH phrase tone and a Low edge tone, which is the typical contour of Yes/No questions (Figure 11). Another new finding though, is the high plateau that is occurred between the phrase and the edge tone in a percentage of 90% in the second contour's data.

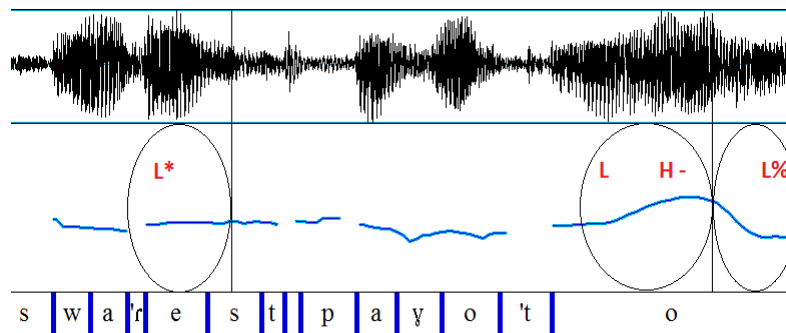


Figure 11. The second type of contour of the dialectal question σου αρέσει το παγωτό; 'do you like ice-cream? '.

In terms of nuclear pitch accent, I replicated the literature finding that it was L* in all the utterances. I, however, observed two different alignments for the phrase tone (Figure 12).

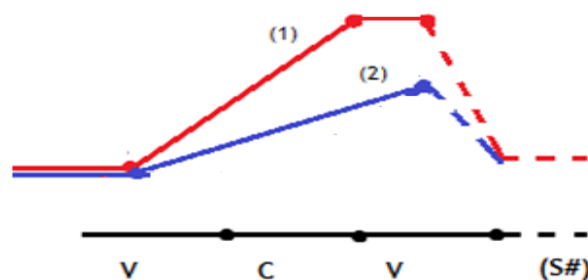


Figure 12. The second type of contour presents two different realisations. The one shown in red has a high plateau, whereas at in the one in blue there is only a high point.

The one of the two alignments forms a high plateau in a frequency of 90%, that it also something new. The alignment of the high plateau occurs in the last vowel of the utterance and at the beginning of the vowel or in the middle due to tonal crowding conditions (depends on the unstressed interval syllables between the last stress and the end of utterance). Finally, I also did the same measurements for edge tone, noticing differences in the contour's realisation due to tonal crowding. As can be seen in Figures 13 and 14, the more unstressed interval syllables there are the more canonically the contour is realised. The measurements for scaling replicated the existing literature (Arvaniti et al. 2006).

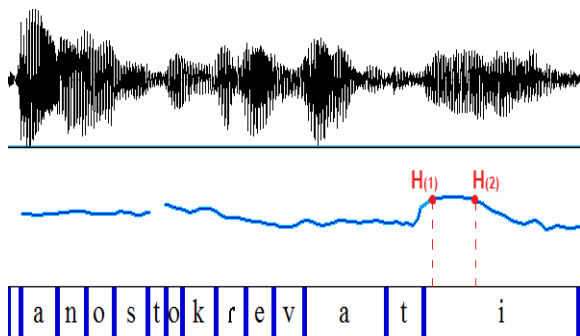


Figure 13. We see the alignment of the high plateau of the Phrase tone in the utterance *πάνω στο κρεβάτι*; '[is it] on the bed?', where there is only one unstressed interval syllable before the end of the utterance.

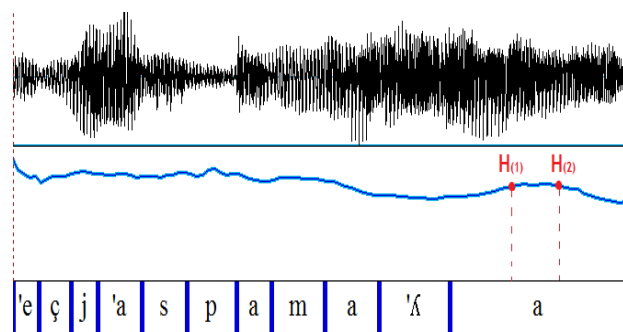


Figure 14. We see the alignment of the high plateau of the Phrase tone in the utterance *έχει άσπρα μαλλιά*; 'does s/he have white hair?', where no unstressed interval syllable is found before the end of the utterance.

4. Discussion

Comparing the utterances produced by the Evia Greek speakers (Figures 15, 16, and 17) with those produced by a native speaker of standard Greek (Figures 18, 19, and 20), I found differences primarily in the contour shape noticing a phonological difference as different types of intonation are used for the same pragmatic meaning.

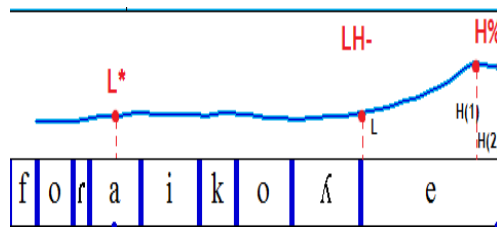


Figure 15. The contour of the utterance *φοράει κολιέ;* 'Is s/he wearing a necklace?', where there is no unstressed interval syllable before the end of the utterance.

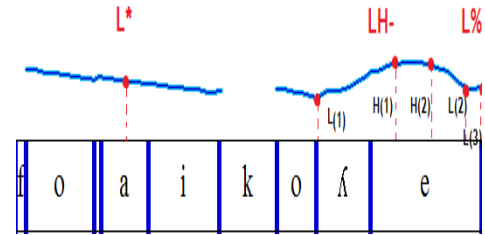


Figure 18. The contour of the same utterance presented in Figure 15, produced by a native speaker of Standard Greek (SMG).

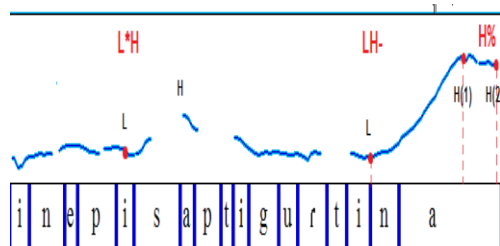


Figure 16. The contour of the utterance *είναι πίσω απ' την κουρτίνα;* 'Is it behind the curtains?', where there is one unstressed interval syllable before the end.

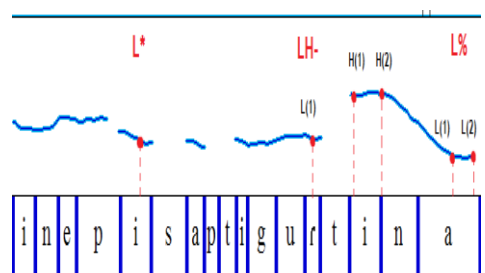


Figure 19. The contour of the same utterance presented in Figure 16, produced by a native speaker of Standard Greek (SMG).

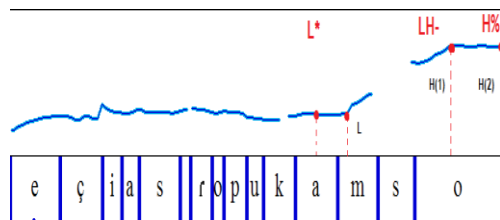


Figure 17. The contour of the utterance *έχει άσπρο πουκάμισο;* 'does s/he have a white shirt?', where there are two unstressed interval syllables before the end.

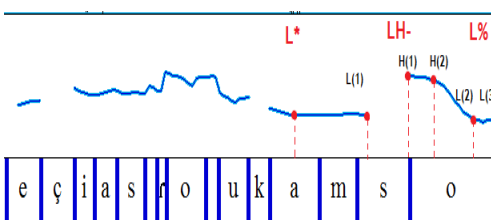


Figure 20. The contour of the same utterance presented in Figure 17, produced by a native speaker of Standard Greek (SMG).

As regards the second contour, phonetic differences were found in scaling, in the alignment of the Phrase tone and in the presence of the high plateau in the dialect case (Figure 21).

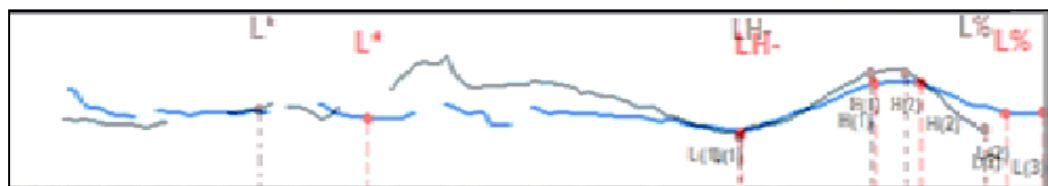


Figure 21. Blue shows the second type of contour in the dialect, whereas black shows the same utterance produced by a native speaker of standard Greek.

Differences were also detected in how the aural perception of the dialect questions. In an informal perception experiment, big differences were found between the two types of questions, too. So, with this study I examined the realisation of the dialect questions and found two different types of contours. The first one is totally different from standard Greek and the second one presents a phonetic difference that has to do with the scaling, the alignment and the plateau, even though it has the same shape with standard Greek.

5. Future study

Future study will need to address focus, to examine longer utterances, look at vowel duration, as well as use a monolingual/monodialectal Evia Greek speaker for the experiments in order to remove the possibility that the subjects adapt their speech to standard Greek.

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